BEDSIDE MEDICINE FOR BEDSIDE DOCTORS

An open forum for brief discussions of the workaday problems of the bedside doctor. Suggestions for subjects and discussants invited. Useful extracts from letters will be published.

WHAT ARE THE ESSENTIALS IN POST-OPERATIVE CARE OF PATIENTS AFTER EXTENSIVE BONE SURGERY?

Ernest W. Cleary, San Francisco — The trauma and shock-productive manipulations of major bone surgery make postoperative care a serious consideration. This observation applies with double force to accidental injuries extensively involving bones.

An experienced nurse constantly at the bedside, with judgment enough to handle her patient intelligently and to recognize the early evidence of impending complications, is more than half the battle. She should be fortified by the surgeon's written orders.

Before the patient leaves the surgery, a gastric lavage with a gram of soda bicarbonate in six or eight ounces of water left in the stomach alleviates nausea and thirst.

If much blood has been lost, normal salt solution by hypodermoclysis or intravenously is advisable. In some cases the Murphy drip is of advantage.

Immobilization of the operated part should be adequate, not only to prevent distortion, but to minimize pain, shock, hemorrhage and delayed healing. Asepsis is relative, practically never absolute, and immobilization helps absorption of contaminating organisms and sharp localization of infection if it occurs.

"Heat is life; cold is death," said a noted professor of surgery as he gave instructions for keeping the postoperative patient warm. Put warm garments on the patient before he leaves the surgery. Have his bedding and room thoroughly warmed and kept warm and well ventilated throughout the critical postoperative period.

Water should be given frequently, in small quantities, as soon as the patient can retain it. The writer believes that patients freely supplied with alkaline mineral water get on better and are more resistant to infections. Routine use of liquid petrolatum facilitates bowel elimination. Enemata are preferable to drastic catharsis. Catheterization if necessary should be done only by an attendant competent to avoid infection. Feeding should begin with liquids the morning after operation, if the patient is able to retain food and desires it. Wait till the patient wishes to eat. Soon he should have food which requires mastication. The gastrointestinal tract is thereby encouraged toward normal activity.

Stimulants are practically always contraindicated. A patient may remain for hours in a very low state, respirations shallow, heart action feeble and extremities cold, and yet recover uneventfully if kept warm and quiet and not stimulated. This miscalled "sinking spell" in such a patient is more often a beneficent reaction which conserves vitality. Inexperienced attendants, unaware of the significance of this reaction, fearful of opiates and ignorant of the effects of narcosis in such cases, are prone, by the same token, to be too ready with dangerous and contraindicated stimulants. Caffein, strychnin or other powerful stimulant may fatally spur a body which has need of and is trying to rest.

Narcotics, judiciously used are a strong support. Morphin sulphate is the safest and surest. The patient is best kept well under its influence during the first three days at least. A young adult may require as much as one-fourth grain every four hours; children and the aged proportionally less. The slow respirations and contracted pupils, indicative of deep narcotization, are too easily recognized by the experienced to make overdosage an imminent danger. The patient should never at this stage so lack the narcotic as to become restless and to suffer severe pain. The dose may be tapered off rapidly in frequency and quantity, and discontinued within a week. Bromides or mild hypnotics may be used as the opiate is withdrawn. Morphin properly administered induces semisuspended animation similar in some respects to hibernation in animals. It aids the natural reaction and the patient dozes toward recovery with a minimum expenditure of energy. Morphin does not depress the heart. Respiratory depression, due to morphin, is easily kept within control by intelligent administration. In fifteen years of practice the writer has not seen a patient in serious danger from morphin given by the surgeon's orders. He has several times seen disaster from failure to use it. Not a single instance is recalled of morphin habit developed from postoperative prescriptions. Morphin does constipate and may interfere temporarily with voluntary emptying of the bladder, it does mask symptoms, it sometimes nauseates, and very rarely a patient with an idiosyncracy may be excited or too deeply narcotized. All the objections to and shortcomings of morphin pale into insignificance compared to the signal service which it renders the patient in his extremity.

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N. T. Enloe, Chico—The postoperative care of a patient depends largely on the location of the surgery done, the amount of injury necessary to the parts in performing the operation, the condition of the wound as to sepsis or asepsis, and the skill and care of the surgeon.

Should the wound be an infected rather than a clean one, the postoperative care should begin in the surgery. Clean the wound thoroughly with iodin neutralized with plenty of alcohol. Keep the wound full of ether when closing. Use no larger drain than

is absolutely necessary, and place it at the most dependent part.

If the wound is not infected it is not necessary to make it so. Most cases become infected from the skin, this infection being carried with perspiration even after the most careful preparation has been made. Avoid this infection by painting the field of operation with tincture benzoin compound two or three times and allowing it to dry thoroughly before beginning to operate. This is a strong antiseptic. It forms a coating on the skin and prevents the perspiration. The use of towels is to be condemned. They are in the way of the surgeon, and are no barrier to perspiration, which, when mixed with blood, is carried into the wound.

After skin incision is made, change to a sterile knife and fill the wound with tincture benzoin compound.

The doctor's orders must be carried out, as Doctor Cleary suggests, by an experienced nurse of good judgment, and the patient kept quiet. The use of suggestive therapeutics is very important at this time, for practically all cases of shock are the result of fright and not of surgery. Should shock occur, and even should it be surgical, suggestion, good nursing and absolute quiet for the patient usually give the best results. A horse, worn out, nearing the end of a long journey, might reach home by careful persuasion. But one lash of the whip, although it spurs him on for the time, might cause him to fall never to rise again. It is the same in shock. Apply a stimulant. The patient may rally for a short time, but later collapse after this energy is spent and never be able to come back.

I never use gastric lavage. If a physic is given forty-eight rather than twenty-four hours prior to the operation or not given at all, I find very little nausea.

If the operation is necessary as a result of an injury, usually shock, loss of blood and severe pain follow. The shock generally subsides as soon as the patient's confidence is gained. If blood is lost to the point of danger, it should be replaced by saline, preferably by rectum, 2 to 4 ounces, as often as the patient can retain it. In extreme cases use saline intravenously or by hypodermoclysis. The annoying effect of the Murphy drip on the patient has caused me to abandon it.

Immobilization is imperative in all cases. It is conducive to the best possible function after recovery, lessens the irritation which, in turn, lessens the hemorrhage, encourages better circulation, hastens absorption, lessens pain, and promotes more rapid healing.

Heat is applied when indicated by means of hot blankets, etc., but never by hot-water bottles unless we are sure there is no nerve injury or that the vitality of the patient is not so lowered that the heat applied may result in a burn which would not occur under normal condition.

Pain, if severe, should be kept under control by a narcotic, preferably morphin. In cases of idiosyncrasy I have had good results and no depressing effect by the use of 10 grains of aspirin by rectum.

The alimentary canal should be kept clean by the use of mineral oils or by vaseline made palatable.

I believe that a great many of the postoperative complications in bone surgery can be prevented by proper care in the surgery.

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Robert T. Legge, Berkeley—A greater emphasis should be placed upon the preoperative conditions of each particular case. After exercising the most careful judgment in studying the clinical history and laboratory findings and in making an early diagnosis in the case of bone tumors and osteomyelitis; after using roentgenography at various planes so as not to overlook any pathology; after avoiding the use of hardware in fractures; after debridement in the case of destructive injuries to soft parts and using ultra asepsis in the preparation of the patient for operation; after exercising due respect for the tissues in the field of operation (since primary healing, shock, and hemorrhage are proportionate to the tissue trauma); after routine drainage of all wounds that have any semblance of infection, the postoperative care of extensive bone injuries will be minimized. The after care will consist of rest and scientific nursing, and the patient's hospitalization will be markedly curtailed.

It is certainly a fact that failure in bone operations and anxiety of the surgeon in the postoperative treatment are principally caused by failure to satisfy the necessary biologic, physiologic, and mechanical requirements.

In bone surgery, whether it be due to disease of the structure or to traumatism as in fractures or joint involvements, the surgeon is dealing with hard tissues that require a longer period of convalescence. It is therefore important to use the utmost care to prevent infection. Careful preparation of the site of operation, the best aseptic operating room technique and the use of only sterile instruments in the field of operation are essential. If the asepsis has been perfect the after treatment of extensive bone surgery is absolute rest (secured by cast or Thomas splint), elevation of the part, careful nursing by a well-trained nurse and the prevention of shock, pain, and infection.

A comfortable bed fitted with a Balkan frame which permits easy adjustments and greater comfort to the patient, should be provided.

Should there be a rise in temperature concurrent with chill, followed by sudden elevation of the leukocyte count, the wound should be opened and pus found in the wound or under the periosteum should be drained. Tapping of the bone to allow the escape of pus and to divert the lymph stream away from the circulation may be necessary. If carefully drained and compressed with sterile gauze dipped in boric acid solution and alcohol, the dressings kept warm by means of an electric light over them, and changed frequently, much relief is afforded and progress in regeneration made. The Carel Dakin technique offers excellent results in the treatment of infected bone and soft tissues.

Where suppuration persists, one must always bear in mind a possible sequestrum of bone or other for-

eign body which requires removal. To promote the closing of the fistula, quartz light, heliotherapy or open-air method favor healing. Vaccine therapy has been advocated, especially by some of the European surgeons.

At the earliest possible opportunity physiotherapy should be established to promote function by the use of massage, diathermy, and other mechanical measures.

Lastly, a careful examination of the chest should be a routine measure to determine the presence of pulmonary metastases in a suspected osteogenetic sarcoma, as such findings may be present without any symptoms suggesting such a complication.

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Charles E. Phillips, Los Angeles—These may be considered under two classes: first, general; and second, local. Doctor Cleary has covered, in an admirable manner, the general treatment to be followed.

There is a wide variation in the local treatment of these cases. Many surgeons attribute their successes or failures to some detail of postoperative treatment. Postoperative accidents to the field of operation may be mechanical or infective.

Mechanical accidents may be classified: weakness of operative structure; hemorrhage, either interstitial or as hematoma; myositis or neuritis due to pressure.

Infective: These complications may arise from metastases from foci elsewhere in the body, by stirring up latent infection in compound wounds, even after years have elapsed, retrograde infection from a moist skin, or most frequently from an imperfect operative technique. Postoperative care must be individualized.

While an absolute aseptic technique is theoretically impossible, yet it may be approximated so closely that contamination almost never occurs.

The treatment should be individualized by classifying the risks. Excellent surgical risk should show an incidence of contamination of well under 1 per cent. Fair surgical risks, such as those in which there are foci of infection removed from the site of operation or other conditions lowering resistance.

Careful attention to the reaction and continuation or elevation of temperature beyond the normal should be followed by a careful and frequent inspection of the wound.

If the wound appears abnormal it should be opened. On opening a wound, smears and cultures should be taken routinely.

When infection is demonstrated the wound should be opened widely and Dakin treatment instituted thoroughly. It is by this means that the benefits of the operation or even the patient's life may be conserved.

In poor surgical risks, by reason of local infection or other causes, the immediate postoperative use of the Dakin treatment is indicated that the benefits of the operation may be accomplished. I have effected healing in old fractures complicated by osteomyelitis by a two-stage process. I first uncover the cavity to its fullest extent and, by the use of Dakin treatment, produce a relative sterilization of the cavity, i. e., until no bacteria are apparent on smears. A pedicled bone transplant is then placed and caused to heal under a continuation of the same treatment.

In conclusion: The postoperative treatment of extensive bone surgery must be individualized to obtain the best results.

Rose Bengal Test for Liver Function—N. N. Epstein, G. D. Delprat, and W. J. Kerr, San Francisco, describe a simplification of the technique of the rose bengal test, and review briefly the types of liver injury which may be revealed by a test of this kind. The technique described differs quite markedly from the original technique and offers the advantages of simplicity and accuracy. The artificial standard, made up by adding a known quantity of dye to the normal plasma of each individual has been abandoned, and a two-minute sample is substituted as the standard. The other essential changes in the technique have been the elimination of the four-minute sample, which does not give information of value, and the prolongation of the duration of the test from eight minutes to sixteen minutes. This increased length of time of observation lends more accuracy to the test and has the advantage of giving more information when the eight-minute reading is at the borderline between normal and abnormal. Normal persons absorb rose bengal through the liver from the blood stream very rapidly so that at the end of sixteen minutes only a trace remains in the blood plasma; that is, rarely more than 25 per cent of the amount injected. In chronic cholecystitis the elimination is usually within normal limits, and the test is not an aid in the diagnosis of the condition. In cases of obstructive jaundice, catarrhal jaundice and arsphenamine icterus, the delay in the elimination of the dye is always very definite, being greatest in obstructive jaundice. The test is a valuable aid in detecting these conditions and in following their clinical course. Before the jaundice begins to clear clinically, the improvement in liver activity can be demonstrated by its increased ability to eliminate rose bengal. Following operations for the relief of obstruction of the common duct, the liver function improves markedly. The test may be used as an aid in determining the potency of a cholecystoduodenostomy, as the dye can be readily identified in the duodenal contents. It has proved very valuable in following the course of an arsphenamine hepatitis. In cirrhosis of the liver the impairment of liver function is in direct relation to the amount of scarring in the liver and to the encroachment on the functional reserve of the liver. An advanced case of cirrhosis always shows a marked delay in the excretion of rose bengal. The test is of particular value in the differential diagnosis when ascites is the outstanding symptom. In cardiac failure, in tuberculous peritonitis and in carcinomatosis of the peritoneum, little change from the normal liver function has been noted, while on the other hand, when cirrhosis of the liver is present, there is a very marked impairment of liver function. In metastatic malignancy of the liver the conditions are variable and seem to depend on the amount of liver tissue which can function. Discrete scattered metastatic nodules in the liver do not interfere with its ability to eliminate the dye, but diffuse replacement of the liver tissue by carcinoma very definitely causes a retention of the dye in the blood stream. Chronic passive congestion of the liver does not seem to prevent the absorption of rose bengal, and the curves are within normal limits. Long-continued treatment with arsphenamine and mercury does not disturb the liver activity. Arsphenamine dermatitis unaccompanied by icterus shows elimination of rose bengal within normal limits. In general, it may be seen that the rose bengal test for liver function gives results in direct proportion to the clinical and pathologic data noted in regard to the liver.—*Journal A. M. A.*